

DESIGO™ PX

## System controllers

**PXR11**  
**PXR12**

- For integration of the room controllers in the DESIGO RXC range into the DESIGO building automation and control system (operates as an interface)
- For the creation of room groups
- For the implementation of higher-level system functions
- For the integration of 3<sup>rd</sup> Party LONMARK compatible Devices
- BTL label (BACnet communications passed the BTL test)

### Functions

RXC data points are mapped to BACnet data points and vice versa.

The PXR system controller performs the following main functions:

- Condenses data from the room controllers at the automation level
- Maps DESIGO RXC applications to BACnet for operation and monitoring (grouped as HVAC, lighting and blind control functions)
- Implements higher-level functions for room management:  
Room and zone-based groups, and system functions such as changeover and summer/winter compensation etc.

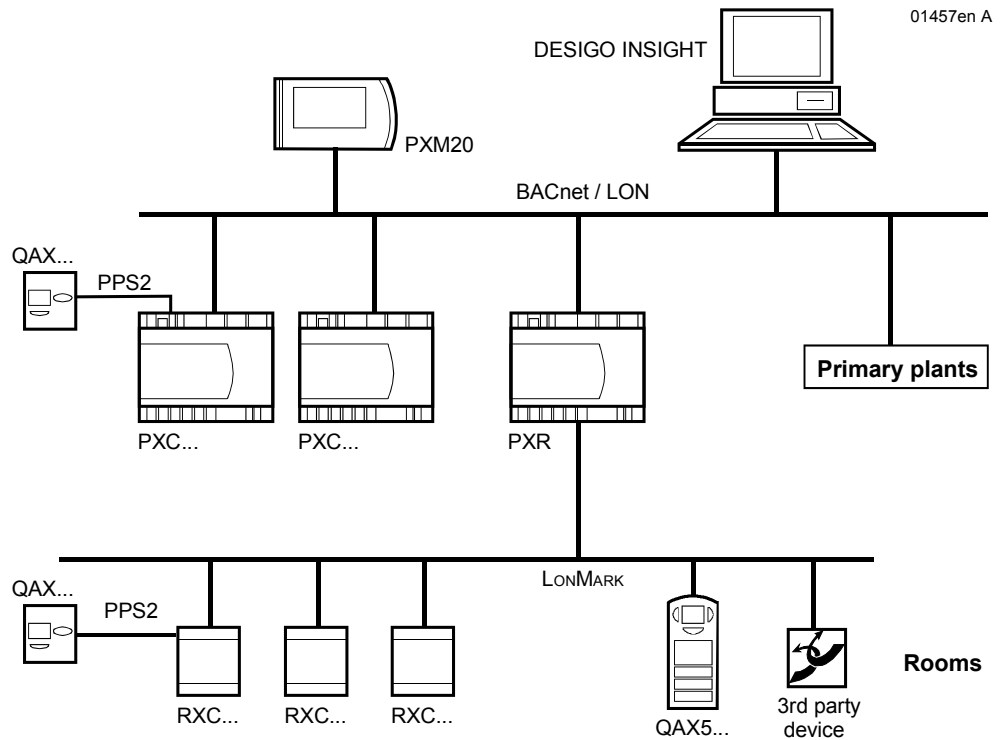
The RXC applications are mapped to the PXR system controller, thereby creating a “room view”. This enables the rooms to be grouped together, enabling them to share occupancy programs, or commands for the control of lighting or blinds.  
 3<sup>rd</sup> Party Devices are mapped to BACnet datapoints and vice versa.

- 3<sup>rd</sup> Party Datapoints can be mapped by Binding with the PXR
- Devices can also be polled from the PXR

Hardware

The PXR hardware incorporates a BACnet component and a LONWORKS® component.

Topology



Note:

For detailed information about the DESIGO RXC range, refer to document CA10333en.

Types

Type	Number of RXC devices per system controller
PXR11	60
PXR12	120

3<sup>rd</sup> Party Integration Licenses "PX LON"

Type	Number of BACnet Datapoints limits
Lite	100
Regular	500
Full	1000

## Ordering

When ordering, please specify the quantity, product name and type code.

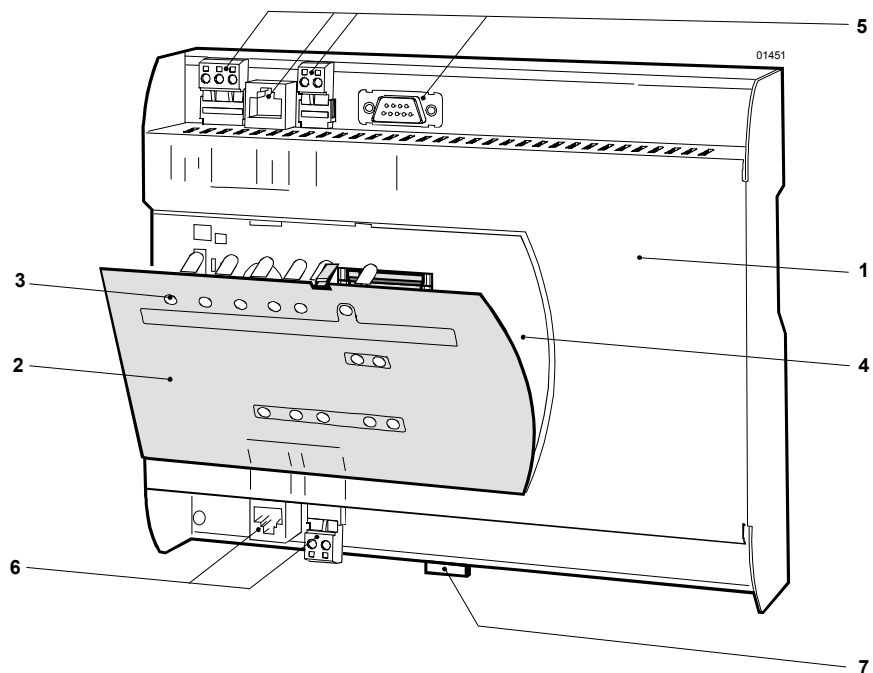
Example: **10 System controllers PXR12**

Note For ordering 3<sup>rd</sup> Party Licenses please refer to WEB-CGU

## Design

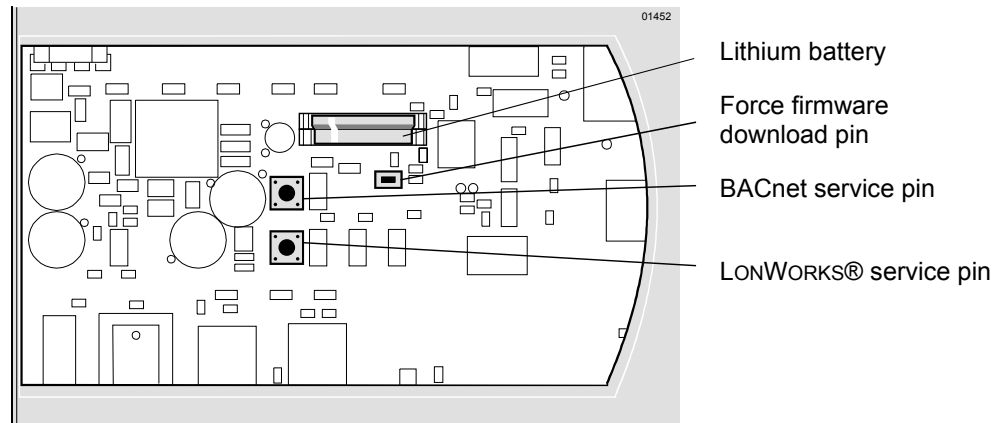
With its compact construction, the PXR controller can be used in severely confined spaces. It is especially suitable for compact control panels or buildings services systems with integrated control panels.

## Housing

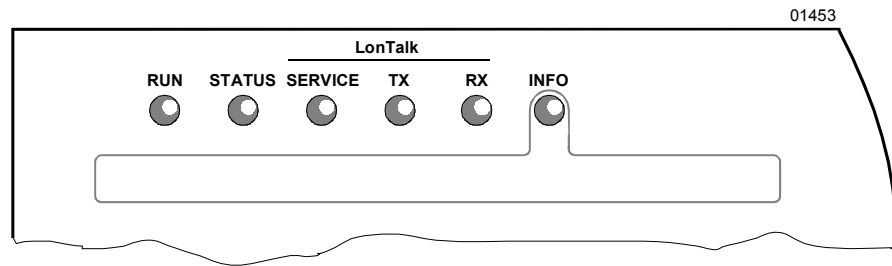


No.	Description
1	Metal housing
2	Front cover
3	LED indicators
4	Printed circuit board
5	Upper connection terminals for operating voltage, HMI / Tool, BACnet, modem
6	Lower connection terminals for tool, LONWORKS®
7	Slider for mounting on DIN rails

**PCB and service pins**

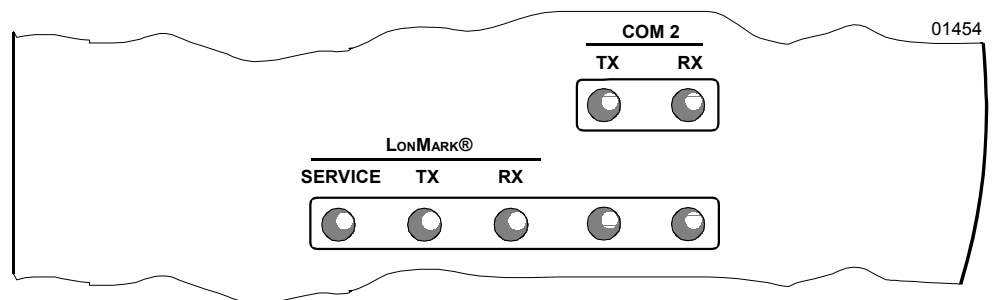


**LED indicators**



**BACnet over LonTalk®**

LED	Color	Activity	Meaning/→ problem solution
<b>RUN</b>	Green	Continuously off	No power supply. → Check power supply.
		Continuously on	Power supply ok; firmware functions ok.
<b>STATUS</b>	Red	Continuously off	Everything ok.
		Continuously on	Hardware fault detected during self-test. → PXR must be replaced.
		Fast flashing	No valid firmware present. → Reload firmware.
<b>SERVICE</b>	Red	Continuously off	LONWORKS® node is configured
		Continuously on	Faulty LONWORKS® chip or service pin is being pressed.
		Flashing	LONWORKS® node not configured → Configure with DTS
<b>TX</b>	Yellow	Flashing	Sending BACnet data packets
<b>RX</b>	Yellow	Flashing	Receiving BACnet data packets
<b>INFO</b>	Red		Not implemented at the moment.



LONWORKS®

LED	Color	Activity	Meaning/→ problem solution
SERVICE	Red	Continuously off	Everything OK. LONWORKS® node configured
		Continuously on	Faulty LONWORKS® chip or service pin is being pressed.
		Flashing	LONWORKS® node not configured → Configure with RXT10
TX	Yellow	Flashing	Sending LONWORKS® data packets
RX	Yellow	Flashing	Receiving LONWORKS® data packets

COM2

TX	Yellow	Flashing	Transmitting data via COM2
RX	Yellow	Flashing	Receiving data from COM2

## Mounting

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The PXR system controller can be snap-mounted on DIN rails or screwed directly to a mounting plate.

## Engineering

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Engineering is carried out with the DESIGO TOOLSET (DTS):

- Create project with SYSTEM DESIGN (DTS-SD)
- Export completed project to DTS-PX
- Export completed project to RXT10
- Use the RXT10 to commission the RXC controllers (online)
- Use DTS-PX to commission PXR (online).

Optional:

- Modifications at field level (online)
- Reload modified RXT10 project into DTS-SD
- Export modified project to DTS-PX
- Re-commission the PXR using DTS-PX (online).

3<sup>rd</sup> Party Engineering:

- Importing of the 3<sup>rd</sup> party data is carried out with the PX OPEN MARLON Tool

## Commissioning on the BACnet side (ALN)

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The tool used for commissioning on the automation side (BACnet) is PX DESIGN, a component of the DESIGO TOOLSET.

- An address is assigned to the device
- The PXR application downloaded.

Addressing

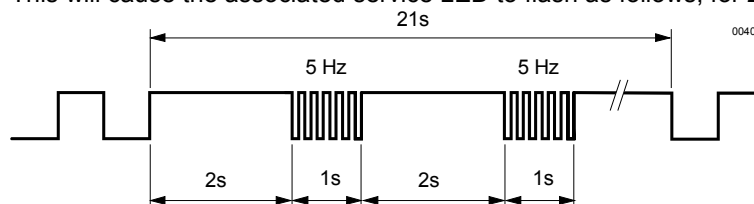
Press the service pin on the PCB

or

Enter the BACnet neuron ID from the keyboard (NB: scope for error with this method!)

To check the procedure, a wink command can be sent to the relevant PXR controller.

This will cause the associated service LED to flash as follows, for 21 seconds:



Force firmware  
download pin

The flash memory contains the following:

- (A) The firmware (the basic program used to process the applications)
- (B) the D-MAP applications
- (C) the LONWORKS® image (descriptive information for the RXC devices)

If the force firmware download pin is depressed during a restart or power-up, the red status LED will light up and (B) and (C) will be deleted from the flash memory.

The system controller waits for approximately 5 s for the signal to activate the firmware loader.

When this signal is received, the firmware (A) will also be overwritten.

At the end of this time period, the controller will start, whether or not the firmware has been downloaded.

## Commissioning on the LONWORKS® side (FLN)

On the field side (LONWORKS®), the RXT10 tool is used for commissioning.

- The device is addressed (enter the LONWORKS® neuron ID or press the service pin and transmit a wink command, as above)
- The application descriptions and the address information is downloaded into the RXC devices (.xif files)
- The mapping files in the PXR are downloaded with the bindings (via file transfer).

For a detailed description, refer to the manual for the RXT10 tool, document CA110338.



### Caution!

If by mistake a physical connection exists between the two networks (FLN / LONWORKS® and ALN / BACnet), the tool RXT10, while installing the PXR as a Master device, will set the LONWORKS® nodes of the automation level to "unconfigured". As a consequence these nodes will no longer be recognized ("not responding").

## Maintenance

### Battery life

Lithium batteries usually have a life span of at least four years. The system controller automatically sends a system event in order to indicate a low charge. After the "Battery low" event there are several months of remaining life span.

### Battery change

To change the battery remove the front cover. As long as there is an external power supply, the battery may be removed for unlimited time.



### Caution!

**To prevent hardware damage by electrostatic discharge (ESD), a wrist strap with earth cable must be used during the battery change.**

## Disposal



The controller includes electrical and electronic components and must not be disposed of as domestic waste.

**Current local legislation must be observed.**

## Technical data

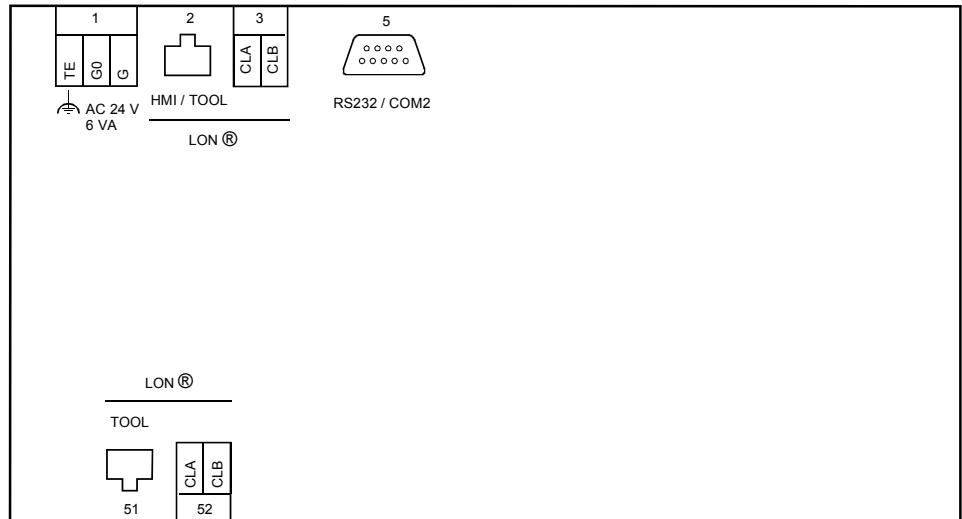
General device data	Working voltage	AC 24 V ± 20 %
	Extra-low voltage PELV	HD 384
	Frequency	50/60 Hz
	Power consumption	Max. 6 VA
	Internal fuse	Thermal, self-resetting
Operating data	Processor	Motorola 68000
	Memory space	FLASH 7 MByte
	(inkl Memory Extension Board)	RAM 4Mbyte
	Data backup in case of power failure Configuration parameters (Flash)	> 10 years
Plug-in screw terminals	Power supply and signals	Stranded or solid conductors 0.25 to 2.5 mm <sup>2</sup> or 2 x 1.5 mm <sup>2</sup>
BACnet over LonTalk connection (Blocks 2 and 3)	Interface type	TP/FT-10
	Transceiver	FTT-10A
	Bit rate	78 kBit/s
	Protocol	BACnet over LonTalk
	RJ45 connector wiring	
	Connecting cable for PXM10 / PXM20 / DESIGO TOOLSET	Max. 3m
	Wiring, plug-in screw terminal	
	Cable type	2-core, twisted pair, unshielded
Cable lengths	Max. 450m in free topology Max. 900m in serial topology	
COM2 port	Interface type	RS232
	Baud rate	38400
	Data bits	8
	Stop bits	1
	Parity	None
	Flow control	Xon/Xoff
	Wiring	
Cable type	9-core standard screened cable	
Cable length	Max. 3 m	

LONWORKS® connection (Blocks 51 and 52)	Interface type	TP/FT-10
	Transceiver	FTT-10A
	Bit rate	78 kBit/s
	Protocol	LonTalk
	RJ45 connector wiring	
	Connecting cable for RXT10	Max. 3m
	Wiring, plug-in screw terminal	
	Cable type	See specifications in the RXC installation manual, CA110334
	Cable length	Max. 450m in free topology Max. 900m in serial topology
	Housing protection standard	Protection standard to EN 60529
Protection class	Isolation protection class	II
Ambient conditions	Operation	
	Temperature	Class 3K5 to IEC 721 0 ... 50 °C
	Humidity	< 85 % rh
	Transport	
	Temperature	Class 2K3 to IEC 721 – 25 ... 65 °C
	Humidity	< 95 % rh
Industry standards	Product safety	
	Automatic electrical controls for household and similar use	
		EN 60730-1
	Electromagnetic compatibility	
	For use in residential, commercial and light industrial premises	
	Interference immunity	EN 61000-6-2
	Emitted interference	EN 61000-6-3
Meets the requirements for <b>CE</b> marking:		
Electromagnetic compatibility	89/336/EEC	
Dimensions	<i>See "Dimensions"</i>	
Weight	without / with packaging	1.04 / 1.13 kg

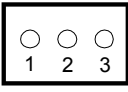
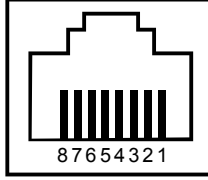

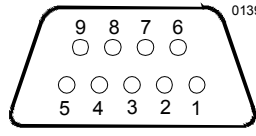


## Connection terminals

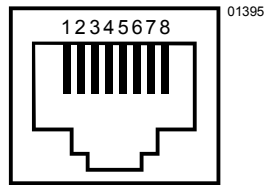
01455 A



## Pin layout

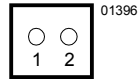
		Pin	Code	Description
<b>1 Power supply</b>	 <p>01393</p>	1	TE	Technical earth
		2	G0	AC 24V Neutral
		3	G	AC 24V Phase
<b>2 HMI / Tool, BACnet over LonTalk</b>	 <p>01395 a</p>	1	CLA	LONWORKS® data A
		2	CLB	LONWORKS® data B
		3	G0	AC 24V neutral
		4	G	AC 24V phase
		5	NC	not connected
		6	NC	not connected
		7	TXD	transmit data COM1
		8	RXD	received data COM1
<b>3 LONWORKS®, BACnet over LonTalk</b>	 <p>01396</p>	1	CLA	LONWORKS® data A
		2	CLB	LONWORKS® data B
<b>5 RS232 / COM2 port</b>	 <p>01394</p>	1	DCD	Data carrier detect
		2	RXD	Received data
		3	TXD	Transmit data
		4	DTR	Data terminal ready
		5	GND	Signal ground
		6	DSR	Data set ready
		7	RTS	Request to send
		8	CTS	Clear to send
		9	NC	Not connected

**51 Tool, LONWORKS®**



1	CLA	LONWORKS® data A
2	CLB	LONWORKS® data B
3	G0	AC 24V neutral
4	G	AC 24V phase
5	NC	Not connected
6	NC	Not connected
7	TXD	Not connected
8	RXD	Not connected

**52 LONWORKS®**



1	CLA	LONWORKS® data A
2	CLB	LONWORKS® data B

**Dimensions**

